



3D Printing Filament

TECHNICAL DATA SHEET - PRO Series ESD-Safe PLA

Commercial Name: MatterHackers PRO Series ESD-Safe PLA

Raw Material: Polylactic Acid (PLA) with multi-walled carbon nanotubes

Designation: Static-dissipative 3D printing filament material

Manufacturer: MatterHackers, Inc.

Product Description

PRO Series ESD-Safe PLA is a static-dissipative PLA compound made with multi-wall carbon nanotubes. It prints on practically any desktop 3D printer without an enclosure, with low warping and very low odor, for fixtures, trays, and enclosures that handle static-sensitive electronics.

- Static-dissipative: $>10^4$ to $<10^9$ Ω surface resistivity (ASTM D257)
- No enclosure or heated chamber required
- Low shrinkage and warping for good dimensional stability
- Very low odor, suited to home and office printing
- Smooth, high-quality surface finish

Storage

PRO Series ESD-Safe PLA filament should be stored between 15 - 25°C, in its original packaging, in a clean and dry environment. When following these recommended storage procedures the minimum shelf life will exceed 12 months.

Dry at 65°C for 4 hours before printing. Printed parts begin to soften near the 55°C heat deflection temperature.

Material Specifications

PROPERTY	VALUE	TEST METHOD
Density	1.26 g/cm ³	ISO 1183
Tensile Strength (Flat)	41 MPa	ASTM D638
Tensile Modulus (Flat)	3.1 GPa	ASTM D638
Tensile Strength (Edge)	38.7 MPa	ASTM D638
Tensile Modulus (Edge)	2.9 GPa	ASTM D638
Tensile Strength (Vertical)	23 MPa	ASTM D638
Tensile Modulus (Vertical)	2.5 GPa	ASTM D638
Flexural Strength (Edge)	51.4 MPa	ASTM D790
Flexural Modulus (Edge)	2.8 GPa	ASTM D790
Izod Impact, Unnotched (Flat)	8.21 kJ/m ²	ASTM D256
Glass Transition Temperature (Tg)	60°C	DSC



PROPERTY	VALUE	TEST METHOD
Heat Deflection Temperature (0.45 MPa)	55°C	ISO 75
Surface Resistivity	$>10^4$ to $<10^9 \Omega$	ASTM D257

Flat and edge: specimen printed lying down or on its side. Vertical: specimen printed upright (across layers). Testing by an independent third-party lab.

Test Specimen Conditions

CONDITION	VALUE
Printer	Bambu P1S
Nozzle Temperature	240°C
Bed Temperature	55°C
Print Speed	246 mm/s
Layer Height	0.20 mm
Infill	Solid

Typical values from printed test specimens. Actual results depend on printer, settings, and environment.

Filament Specifications

PROPERTY	VALUE
Diameter 1.75mm	$1.75 \pm 0.02\text{mm}$
Diameter 2.85mm	$2.85 \pm 0.02\text{mm}$
Net Weight	0.75 kg
Suggested Print Temperature	215-250°C
Suggested Bed Temperature	40-70°C
Heated Chamber	Not required
Nozzle Material	Mildly abrasive. Hardened steel recommended for regular use
Layer Height	0.20 mm
Drying	65°C for 4 hours

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